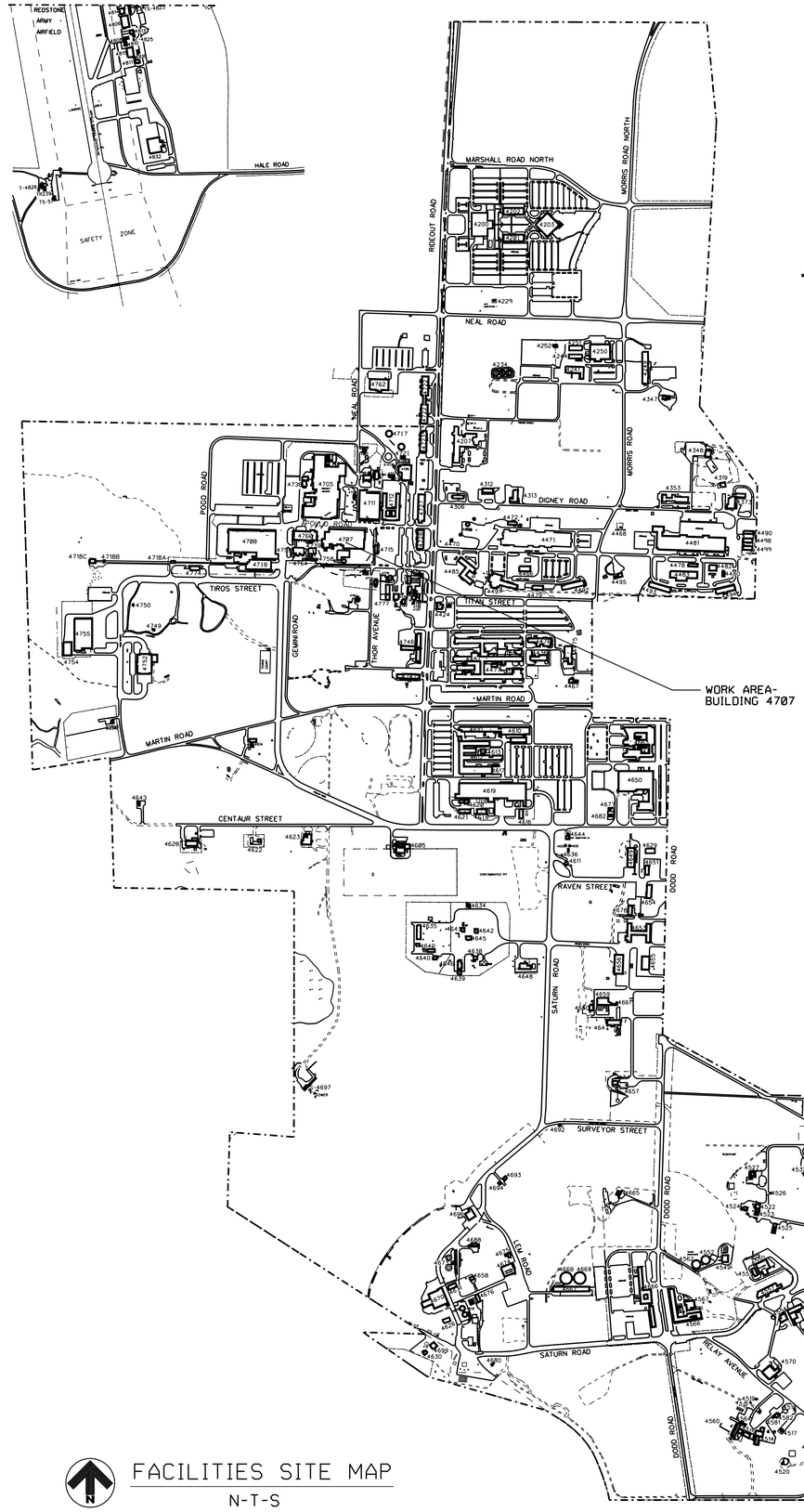
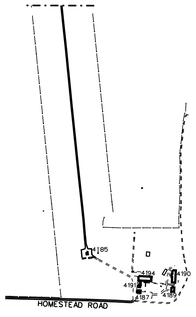
INSTALL AUTOCLAVE, BUILDING-4707

MARSHALL SPACE FLIGHT CENTER, ALABAMA



FACILITIES SITE MAP

N-T-S



Insert

INDEX OF DRAWINGS

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	PLUMBING		
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E5	MOTOR CONTROL CENTER	FAC-FQ-4707-E5	
E6	ELECTRICAL PANEL SCHEDULES	FAC-FQ-4707-E6	
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	REFERENCE		
R1	EQUIPMENT BASE SUPPORT DETAILS	SK12856R-R1	
R2	EQUIPMENT BASE SUPPORT DETAILS	SK12856R-R2	

REDUCED SIZE DRAWING

DO NOT SCALE

CADD DRAWING

CHANGES TO THIS DRAWING SHALL BE MADE ON CADD ONLY.

12865.R 10-09-96 SBG

LATEST CADD UPDATE: 02-26-99 02:15 PM BY: C.GORDON

CONCURRENCE:							
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CONCURRENCE: JOHN R. NEBRIG		1 CC	2/26/99	AS-BUILT	98088	RDP	LWG
MAINTENANCE	/06/23/97/	REV.	BY	DATE	REVISION	C.I. NO.	APPROVED
CONCURRENCE: J.H. VICK	/06/24/97/						
USING OFFICE							
CONCURRENCE: M.L. McINTOSH	/06/19/97/						
ENVIRONMENTAL HEALTH							
CONCURRENCE: DENNIS S. DAVIS	/06/19/97/						
SAFETY OFFICE							
CONCURRENCE: M.E. MANN							
COMMUNICATIONS OFFICE	/06/18/97/						

TELECOMMUNICATIONS EQUIPMENT AFFECTED BY THIS CONTRACT WORK IS NOT TO BE ALTERED OR REMOVED BY THE CONTRACTOR; CONTACT THE COTR IN THE EVENT OF A CONFLICT.

REF. NO.

X-1

OF 1

NASA Marshall Space Flight Center
Huntsville, Alabama 35812

WORK REQUEST NO. 1286-0000-288-5.R

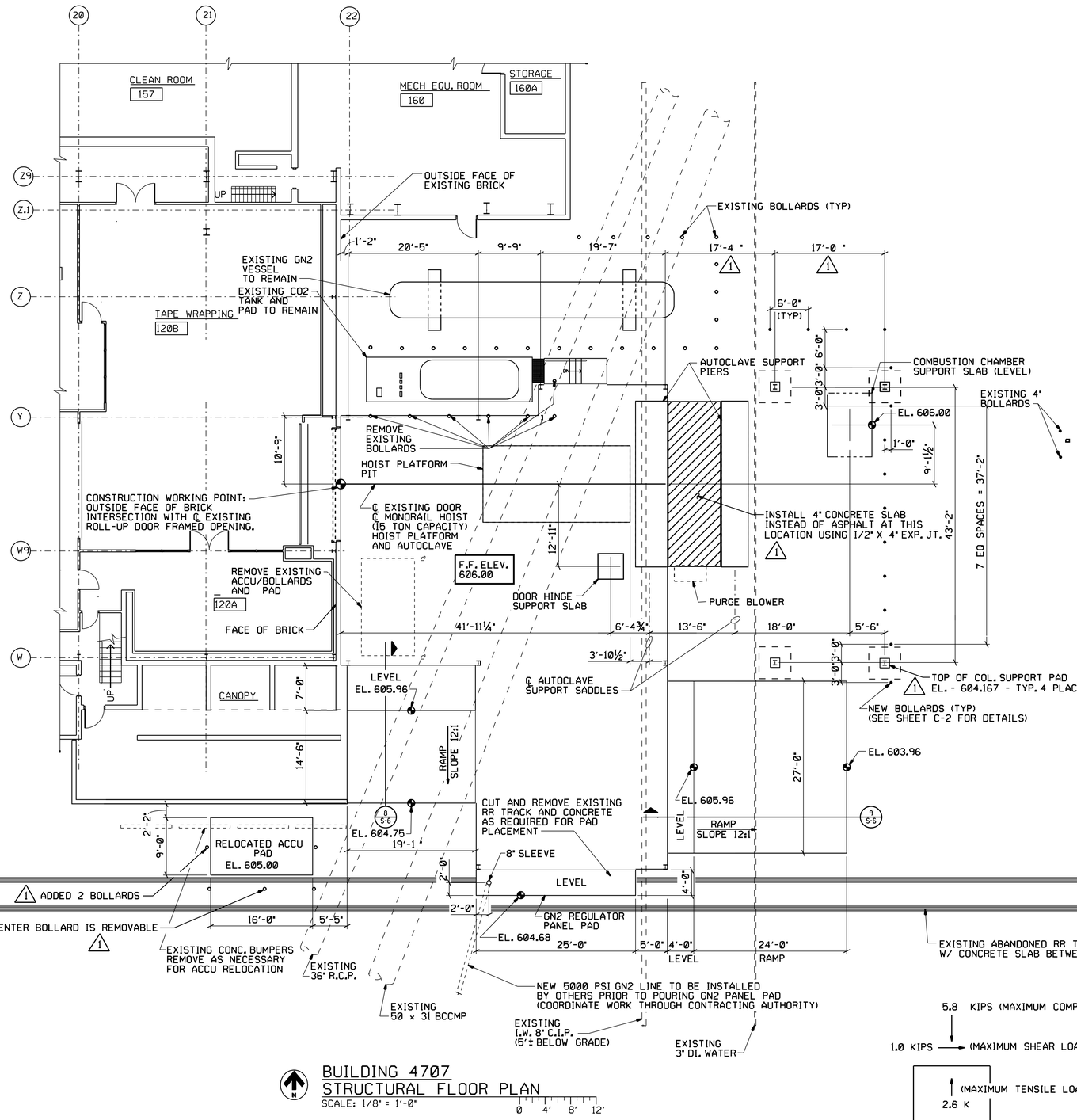
BUILDING 4707

INSTALL AUTOCLAVE

TITLE SHEET

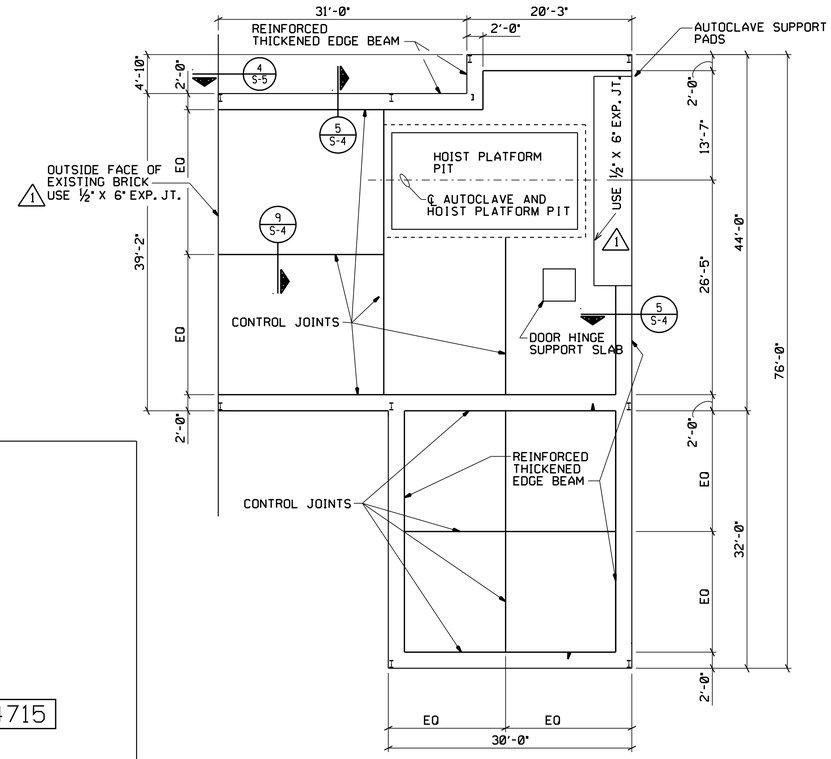
AE FIRM: AJT & ASSOCIATES, INC. HUNTSVILLE - ALABAMA		NASA AE CONTRACT NO. NASA 8-40083
SUBMITTED: HOWARD C. BOZEMAN	APPROVAL RECOMMENDED: R.B. FELDER	ACCEPTED FOR CONSTRUCTION: J. CLARK BOAZ
AE: DATE: 01-17-97	AB21 DATE: 06-24-97	AB41 DATE: 06-25-97
DESIGNED D. SELLERS	APPROVAL RECOMMENDED: ARTHUR HARGROVE JR AJT & ASSOCIATES, INC.	DWG NO. FAC-FQ-4707-X1
DRAWN S. GARRETT		
CHECKED D. SELLERS	DESIGN DATE: 06-24-97	
SCALE: AS NOTED	SPEC. NO. BMMS-3	SHEET 1 OF 27

MSFC-FORM 232 REV. 8-21-95-RCL



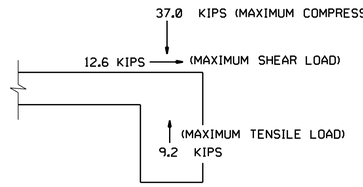
BUILDING 4707 STRUCTURAL FLOOR PLAN

SCALE: 1/8" = 1'-0"



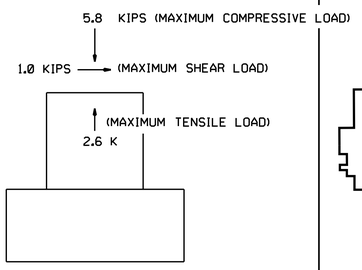
BLDG ADDITION FOUNDATION PLAN

SCALE: 1/8" = 1'-0"



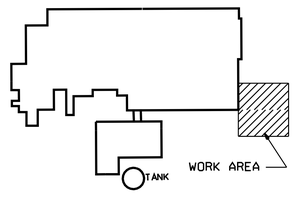
DESIGN COLUMN REACTIONS

(EDGE BEAMS)



DESIGN COLUMN REACTIONS

(ROOF ONLY ISOLATED COLUMNS)



BUILDING 4707
KEY PLAN
N.T.S

1 REFERENCE DESIGN CHANGES REVIEWED FOR INCORPORATION
RFI-002, 008, 010, 016, 038, 041, 073, 075, 083

REDUCED SIZE DRAWING
DO NOT SCALE

CADD DRAWING
CHANGES TO THIS DRAWING SHALL BE MADE ON CADD ONLY.
12865 10-15-96 SBG
LATEST CADD UPDATE: 04-26-99 10:30 AM
BY: G. GORDON

REV.	BY	DATE	REVISION	C.I. NO.	APPROVED	
1	GG	3/26/99	AS-BUILT PER REDLINES	98088	RDP	LWG

CONCURRENCE: / / / /
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CONCURRENCE: JOHN R. NEBRIG /06/23/97/ MAINTENANCE
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REF. NO.

S-1 OF 6

NASA Marshall Space Flight Center
Huntsville, Alabama 35812

WORK REQUEST NO. 1286-0000-288-5.R

BUILDING 4707
INSTALL AUTOCLAVE
STRUCTURAL PLANS

AE FIRM: AJT & ASSOCIATES, INC. HUNTSVILLE - ALABAMA		NASA AE CONTRACT NO. NASA 8-40083
SUBMITTED: HOWARD C. BOZEMAN	APPROVAL RECOMMENDED: R.B. FELDER	ACCEPTED FOR CONSTRUCTION: J. CLARK BOAZ
AE: DATE: 01-17-97	AB21 DATE: 06-24-97	AB41 DATE: 06-25-97
DESIGNED D. SELLERS	APPROVAL RECOMMENDED: ARTHUR HARGROVE JR AJT & ASSOCIATES, INC.	DWG NO. FAC-FQ-4707-S1
DRAWN R. WILLIS		
CHECKED R. TALIANKO	DESIGN DATE: 06-24-97	
SCALE: AS NOTED	SPEC. NO. BMMS-3	SHEET 10 OF 27

MSFC-FORM 232 REV. 8-21-89-RCL

STRUCTURAL NOTES

1. STRUCTURAL WORK SUMMARY:
   * CONSTRUCTION OF FOUNDATIONS FOR GFE AUTOCLAVE AND HOIST PLATFORM
   * PLACEMENT OF AUTOCLAVE EQUIPMENT ON PREPARED FOUNDATIONS
   * PLACEMENT OF HOIST PLATFORM ON PREPARED FOUNDATIONS
   * CONSTRUCTION OF BUILDING ADDITION FOUNDATIONS AND FLOOR SLAB
   * ERECTION OF PRE-ENGINEERED METAL BUILDING ON PREPARED FOUNDATION

2. SIZE AND WEIGHT (APPROXIMATELY 450,000 POUNDS) OF AUTOCLAVE MAKES PLACEMENT OF AUTOCLAVE NECESSARY PRIOR TO CONSTRUCTION OF METAL BUILDING ADDITION. CONTACT CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE (COTR) TO SCHEDULE DELIVERY OF AUTOCLAVE AND HOIST PLATFORM COMPONENTS TO THE JOB SITE FOR PLACEMENT ACTIVITY AS SOON AS THE FOUNDATIONS ARE ADEQUATELY CURED AND BACKFILLED.

3. IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, PLACE AUTOCLAVE AND HOIST PLATFORM ON THEIR PREPARED FOUNDATIONS. CONTACT COTR FOR PLACEMENT INSTRUCTIONS. ALLOW CONCRETE TO CURE FOR A MINIMUM OF TEN DAYS PRIOR TO PLACING AUTOCLAVE AND HOIST PLATFORM. DO NOT PLACE AUTOCLAVE NOR HOIST PLATFORM UNTIL BACKFILLING OPERATIONS OF THEIR RESPECTIVE FOUNDATIONS ARE COMPLETE.

4. VERIFY ALL DIMENSIONS AND CONDITIONS AT THE SITE PRIOR TO FABRICATION AND CONSTRUCTION. WHERE DISCREPANCIES EXIST, CONFIRM COURSE OF ACTION WITH THE COTR BEFORE PROCEEDING.

5. ALL PRODUCTS ARE SPECIFIED ON AN "APPROVED EQUAL" BASIS. WHEN SUBSTITUTION OF A SPECIFIED ITEM IS DESIRED, SUBMIT FOR APPROVAL CATALOG AND/OR OTHER DATA NECESSARY FOR PRODUCT EVALUATION.

6. TO AID IN INSTALLATION, CERTAIN DIMENSIONS ARE PROVIDED FOR PRODUCTS SPECIFIED. WHERE AN APPROVED EQUAL IS SUBSTITUTED, SUBMIT TO THE COTR FOR APPROVAL THE SIZE AND WEIGHT OF THE ACTUAL PRODUCT, AND REVISED DRAWING DETAILS NECESSARY FOR INSTALLATION.

7. TOP OF NEW FLOOR SLAB SHALL MATCH EXISTING TOP OF SLAB ELEVATION (606.00).

8. CARE SHALL BE TAKEN TO PREVENT DAMAGE OF EXISTING UTILITIES, BUILDING SLAB AND FOUNDATION, AND TANK FOUNDATIONS DURING CONSTRUCTION.

9. GRANULAR MATERIAL FOR SUBBASE SHALL BE SAND, SAND-GRAVEL, CRUSHED STONE, OR A COMBINATION OF THESE MATERIALS, MEETING THE FOLLOWING REQUIREMENTS:

MAXIMUM AGGREGATE SIZE:	1-1/4 INCH
PASSING NO. 200 SIEVE:	15% MAXIMUM
PLASTICITY INDEX:	6 MAXIMUM
LIQUID LIMIT:	25 MAXIMUM

10. COMPACT SUBBASE TO A MINIMUM OF 98% MAXIMUM DENSITY AT OPTIMUM MOISTURE DETERMINED BY SOIL COMPACTION TESTS IN ACCORDANCE WITH ASTM D698.

11. CONCRETE CONSTRUCTION AND PLACING EXCEPT FOR SLAB-ON-GRADE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF ACI 301-89 AND ACI 318-95.

12. CONCRETE SLAB-ON-GRADE CONSTRUCTION AND PLACING SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF ACI 301-89 AND ACI 302.1R-89.

13. NO CONCRETE ADMIXTURES CONTAINING CHLORIDES ARE ALLOWED, UNLESS APPROVED BY THE COTR.

14. WATERSTOPS: EQUAL TO "GREENSTREAK PVC STYLE 702", AS MANUFACTURED BY GREENSTREAK, ST. LOUIS, MO (800) 325-9504.

15. WHERE REQUIRED FOR REINFORCING STEEL BARS, PROVIDE HOOK AND/OR SPLICE LENGTHS CONFORMING TO ACI 318-95. SEE "DEVELOPMENT AND SPLICE LENGTH" CHART ON THIS SHEET.

16. AT PERIMETER OF NEW CONSTRUCTION AREAS, SAW CUT EXISTING ASPHALT PRIOR TO NECESSARY EXCAVATION. UPON COMPLETION OF BUILDING AND PERIPHERAL EQUIPMENT FOUNDATION CONSTRUCTION, REPAIR/REPLACE ASPHALT PAVEMENT IN CONSTRUCTION AREA TO MATCH ORIGINAL. AT NEW ENTRY RAMP LOCATIONS, PROVIDE ASPHALT WEARING SURFACE FLUSH WITH TOP OF CONCRETE.

17. PRIOR TO POURING CONCRETE, ENSURE ALL EMBEDDED UTILITIES AND PENETRATIONS ARE PROPERLY LOCATED AND SECURELY IN PLACE. FOR LOCATIONS OF MECHANICAL AND PLUMBING PENETRATIONS/EMBEDMENTS, SEE SHEETS M-1 AND P-1. FOR LOCATIONS OF ELECTRICAL PENETRATIONS/EMBEDMENTS, SEE SHEET E-1.

18. PROVIDE 3/4" CHAMFER ON EXPOSED CONCRETE EDGES.

19. AT THE LOCATION OF EACH SLAB CONTROL JOINT LINE, THE WELDED WIRE REINFORCEMENT SHALL BE DISCONTINUOUS (WIRE CUT OR SHEETS PLACED WITH A 1/4" TO 1" GAP BETWEEN ENDS) BEFORE PLACING CONCRETE.

20. UNLESS OTHERWISE SHOWN, MINIMUM COVER FOR CONCRETE REINFORCING SHALL BE 3".

21. CONCRETE FLOOR SLAB SHALL HAVE A SMOOTH, TROWELLED FINISH.

22. CURE CONCRETE BY ONE OF THE FOLLOWING METHODS:

    (NOTE: DO NOT USED LIQUID MEMBRANE CURING COMPOUND.)

    A. COVER FINISHED, WETTED CONCRETE SLAB SURFACE WITH POLYETHYLENE SHEETING CONFORMING TO ASTM C171. LAP A MINIMUM OF 3 INCHES AT ADJOINING SHEETS. PREVENT DISPLACEMENT OF COVER DURING CURING PERIOD OF 7 DAYS MINIMUM. PATCH HOLES IN COVER WITH WATERPROOF TAPE. KEEP SLAB SURFACE WET DURING CURING PERIOD.

    B. COVER FINISHED SURFACE AND OTHER EXPOSED SURFACES WITH WET BURLAP AND MAINTAIN IN MOIST CONDITION FOR A MINIMUM OF SEVEN DAYS.

23. EXTERIOR CONCRETE APPROACH SLABS SHALL HAVE A LIGHTLY BROOMED FINISH, WITH STROKES RUNNING IN DIRECTION OF SLOPE.

24. CONCRETE SLAB CONTROL JOINTS SHALL BE MADE AS SHOWN IN DETAIL 9/S-4. JOINTS SHALL BE CUT WHEN THE CONCRETE SURFACE IS FIRM ENOUGH NOT TO BE DAMAGED BY THE CUTTING EQUIPMENT, AND NO LATER THAN 12 HOURS AFTER CONCRETE IS PLACED AND FINISHED.

25. FILL CONTROL JOINTS WITH A COLD-APPLIED, TWO COMPONENT, ELASTOMERIC POLYMER TYPE COMPOUND CONFORMING TO FEDERAL STANDARD SS-S-200. SLAB SHALL CURE FOR AS LONG AS PRACTICABLE BEFORE FILLING JOINTS, WITH A MINIMUM CURE TIME OF 60 DAYS, EXCEPT AS AUTHORIZED BY THE COTR.

26. EXPOSED VERTICAL SURFACES OF CONCRETE SHALL RECEIVE A SMOOTH RUBBED FINISH IN ACCORDANCE WITH ACI 301-89, ARTICLE 10.3.1.

27. PROTECT NEWLY FINISHED CONCRETE FROM DAMAGE AT ALL TIMES.

28. NO BACKFILL SHALL BE PLACED AGAINST NEWLY CONSTRUCTED CONCRETE FOR A PERIOD OF TEN DAYS UNLESS AUTHORIZED BY THE COTR.

29. PLACE BACKFILL IN A MANNER WHICH MINIMIZES UNEQUAL LOADING TO STRUCTURES AFFECTED DURING BACKFILLING OPERATIONS.

30. BASE PLATE GROUT: EQUAL TO "CEILCOTE 648 CP PLUS", AS MANUFACTURED BY MASTER BUILDERS, INC., CLEVELAND, OH (800) 628-9990.

31. PREPARE CONCRETE SURFACE AND INSTALL BASE PLATE GROUT IN ACCORDANCE WITH GROUT MANUFACTURER'S WRITTEN INSTRUCTIONS. FOR GROUT THICKNESSES AND ANCHOR BOLT SPACING OF AUTOCLAVE SUPPORT SADDLES, COMBUSTION CHAMBER, DOOR HINGE BASE PLATE, AND HOIST LIFT SYSTEM BASE PLATES, SEE REFERENCE DRAWINGS SK-12865R1-R1 & R2. PRIOR TO GROUTING, OBTAIN ASSURANCE FROM COTR THAT EQUIPMENT LOCATIONS AND ELEVATIONS ARE CORRECT FOR SYSTEM OPERATIONAL CAPABILITY.

32. DESIGN, FABRICATE, AND INSTALL PRE-ENGINEERED BUILDING IN ACCORDANCE WITH SECTION 13125 OF THE SPECIFICATIONS.

33. BUILDING SHALL BE DESIGNED FOR A 15 TON RATED CAPACITY MONORAIL HOIST TO RUN IN THE EAST-WEST DIRECTION AND COINCIDING WITH THE CENTERLINE OF THE AUTOCLAVE.

34. HOIST AND TROLLEY SYSTEM SHALL CONFORM TO THE CMAA STANDARDS AND APPLICABLE SECTIONS OF THE FOLLOWING SAFETY STANDARDS:

    * ASME B30.11-1993
    * ASME B30.16-1993
    * NASA NSS/GO 1740.9B-1991

    HOIST AND TROLLEY SYSTEM REQUIREMENTS INCLUDE:

    * RATED CAPACITY: 15 TONS
    * LIFT HEIGHT: 20 FEET
    * ELECTRIC CHAIN HOIST (INCLUDE CHAIN STORAGE DEVICE)
    * TWO LIFTING SPEEDS: 4/1 FPM
    * HOIST CLASS: H-4
    * METHOD OF OPERATION: PENDANT
    * MOTOR DRIVEN TROLLEY (MAXIMUM SPEED: 50 FPM)
    * POWER SOURCE: ELECTRIC 230/3/60 OR 460/3/60
    * MONORAIL TROLLEY STOPS PROVIDED AT TERMINATION POINTS
    * MAXIMUM WEIGHT OF TROLLEY WITH HOIST: 1500 LBS.

1 INSTALL CRANE HOIST W/ PENDANT AND CHAIN BASKET ON WEST END OF MECHANISM. (SIDE AWAY FROM AUTOCLAVE).

    HOIST AND TROLLEY SUGGESTED SOURCE: COLUMBUS-McKINNON CORPORATION, AMHERST, NY (716) 689-5400

35. BUILDING COLUMN ANCHOR BOLT SIZES, LOCATIONS, AND EMBEDMENT LENGTH INTO CONCRETE SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FLOOR SLAB WITH EDGE BEAM CONSTRUCTION. COLUMN LOCATIONS MAY BE SHIFTED TO ACCOMMODATE MANUFACTURER'S STANDARD DETAILS.

36. BUILDING MANUFACTURER SHALL FURNISH FINAL DESIGN REACTIONS. IF FINAL DESIGN REACTIONS EXCEED THE PRELIMINARY REACTIONS (SHOWN ON SHEET S-1), ENSURE BUILDING FOUNDATION IS SATISFACTORY BY UTILIZING AN ENGINEER REGISTERED IN THE STATE OF ALABAMA TO VERIFY ADEQUACY OR REDESIGN AND SUBMIT BUILDING FOUNDATION IN ACCORDANCE WITH THE SPECIFICATIONS. SUBMIT FINAL BUILDING DESIGN REACTIONS AND FOUNDATION ADEQUACY VERIFICATION OR REDESIGN FOR APPROVAL PRIOR TO FLOOR SLAB WITH EDGE BEAM CONSTRUCTION.

37. NEW METAL BUILDING ADDITION SHALL INCLUDE CROSS BRACING AND/OR PORTAL FRAMING AS NECESSARY FOR CONFORMANCE TO SPECIFIED LOADING REQUIREMENTS. LOCATE BRACING SO THAT IT DOES NOT INTERFERE WITH DOOR OR WINDOW OPENINGS.

38. PROVIDE TEMPORARY BRACING AND/OR SUPPORT AS NECESSARY FOR LOADING DURING CONSTRUCTION.

39. WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1-96.

40. REPAIR ALL DAMAGE MADE TO SURROUNDING AREA DURING CONSTRUCTION.

DEVELOPMENT AND SPLICE LENGTHS

FOR REINFORCING STEEL BARS PLACED IN 4000 PSI CONCRETE

* QUALIFYING PARAMETERS:

Code: ACI 318-95
Class B Splice
Concrete Design Compressive Strength: 4000 psi
Minimum Yield Strength of reinforcing steel: 60 ksi
Reinforcement Location Factor = Coating Factor = Aggregate Factor = 1.0
Clear spacing of bars being developed or spliced is not less than bar diameter, and clear cover of bars being developed or spliced is not less than bar diameter, and stirrups and ties throughout development length are not less than the code minimum; or clear spacing of bars being developed or spliced is not less than 2 bar diameters, and clear cover is not less than bar diameter.

Bar Size	Development Length	Tension Splice Length	Compression Splice Length
# 3	15	20	12
# 4	19	25	15
# 5	24	32	19
# 6	29	38	23
# 7	42	55	27
# 8	48	63	30
# 9	54	71	34
# 10	60	78	38
# 11	66	86	42
# 14	84	110	53
# 18	107	140	68

Bar sizes are listed in nominal 1/8 inch increments. Lengths are given in inches unless noted otherwise, where splices are required, use tension splice length.

* Note: If one or more actual conditions differs from the above parameters, refer to ACI 318-95, Chapter 12 for additional requirements.

DESIGN DATA

ROOF LIVE LOAD	As Specified in the MBMA 1996 Low Rise Building Systems Manual
ROOF COLLATERAL LOAD	12 psf
WIND DESIGN LOADS	As Specified in the MBMA 1996 Low Rise Building Systems Manual
FOUNDATION DESIGN	1994 Standard Building Code
MONORAIL HOIST CAPACITY	15 Tons
CONCRETE FLOOR LIVE LOAD	400 psf
ALLOWABLE SOIL BEARING	Autoclave & Lift Table Foundation: 5000 psf Individual Column Footings: 2500 psf Continuous Footings: 2000 psf
CONCRETE	28 Day Compressive Strength: 4000 psi Max. Size Aggregate: 1-1/2 inches Air Entrainment: 4% to 7% Slump: 1 inch to 5 inches
REINFORCING STEEL	ASTM A615, Grade 60
HANDRAIL	1-1/4 inch nominal dia., SCH. 40, ASTM A500 Grade B or ASTM A501
1 AUTOCLAVE ANCHORS	1-3/8 inch bolt dia. DECO "Heavy-Duty Anchor, w/ 18" embedment mfg'd by DECO Manufacturing Company, Decatur, IL (800) 637-5861
HOIST PLATFORM SCREW JACK SYSTEM ANCHOR BOLTS (3/4" DIA.)	"Trubolt" Part No. WS-3470, as manufactured by ITW Ramset/Red Head, Paris, KY (800) 354-7432
HOIST PLATFORM SCREW JACK SYSTEM ANCHOR BOLTS (1" DIA.)	"Trubolt" Part No. WS-100120, as manufactured by ITW Ramset/Red Head, Paris, KY (800) 354-7432
COMBUSTION CHAMBER ANCHOR BOLTS	"Trubolt" Part No. WS-3470, as manufactured by ITW Ramset/Red Head, Paris, KY (800) 354-7432
BUILDING COLUMN ANCHOR BOLTS	ASTM A325
GUARDRAIL AND GRATING SUPPORT ANGLE ANCHOR BOLTS	"Trubolt" Part No. WS-3470, as manufactured by ITW Ramset/Red Head, Paris, KY (800) 354-7432

1 REFERENCE DESIGN CHANGES REVIEWED FOR INCORPORATION

RFI-007, 009, 017, 081

REDUCED SIZE DRAWING
DO NOT SCALE

CADD DRAWING
CHANGES TO THIS DRAWING SHALL BE MADE ON CADD ONLY.
12865
11-15-96 JRW
LATEST CADD UPDATE: 04-01-99 07:00 AM
BY: G.GORDON

CONCURRENCE: / / / /
CONCURRENCE: / / / /
CONCURRENCE: / / / /
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OF 6

REV.	BY	DATE	REVISION	C.I. NO.	APPROVED	
1	GG	4/1/99	AS-BUILT PER REDLINES	98088	RDP	LWG

NASA Marshall Space Flight Center
Huntsville, Alabama 35812

WORK REQUEST NO. 1286-0000-288-5.R

BUILDING 4707
INSTALL AUTOCLAVE
NOTES AND DESIGN DATA

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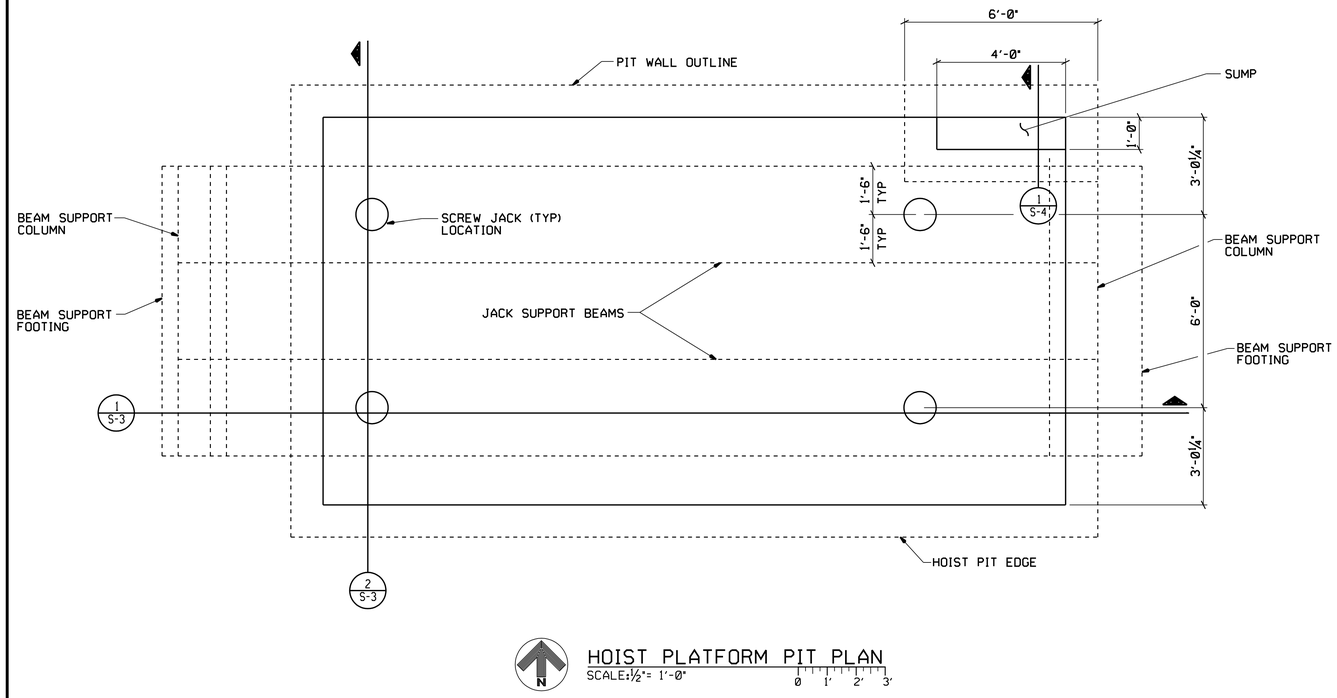
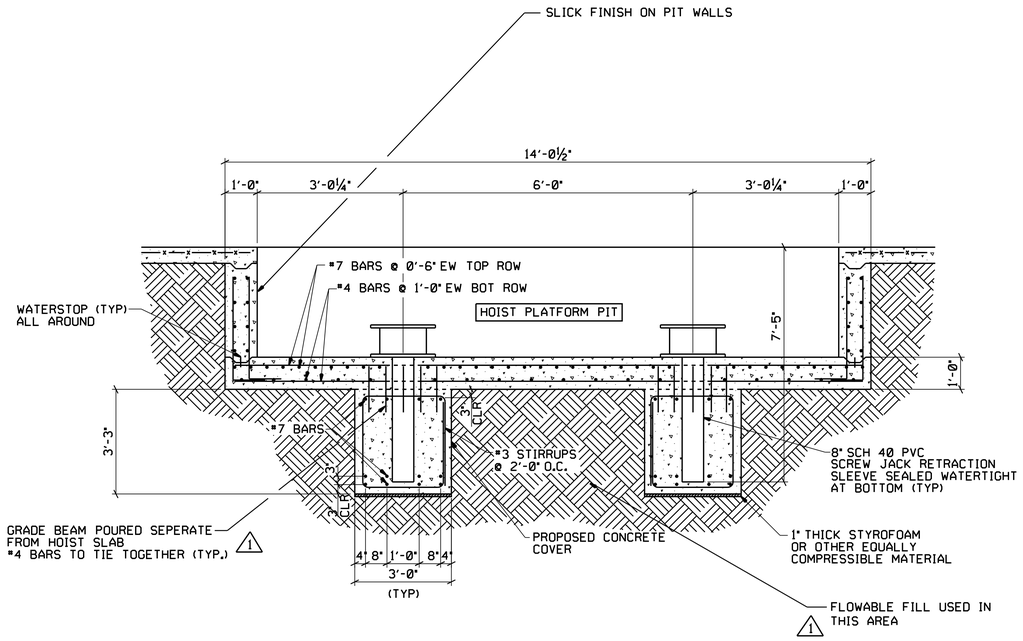
SUBMITTED: HOWARD C. BOZEMAN	APPROVAL RECOMMENDED: R.B. FELDER	ACCEPTED FOR CONSTRUCTION: J. CLARK BOAZ
AE: DATE: 01-17-97	AB21 DATE: 06-24-97	AB41 DATE: 06-25-97
DESIGNED D. SELLERS DRAWN R. WILLIS CHECKED R. TALIANKO SCALE: AS NOTED	APPROVAL RECOMMENDED: ARTHUR HARGROVE JR AJT & ASSOCIATES, INC. DESIGN DATE: 06-24-97 SPEC. NO. BMMS-3	DWG NO. FAC-FO-4707-S2 SHEET 11 OF 27

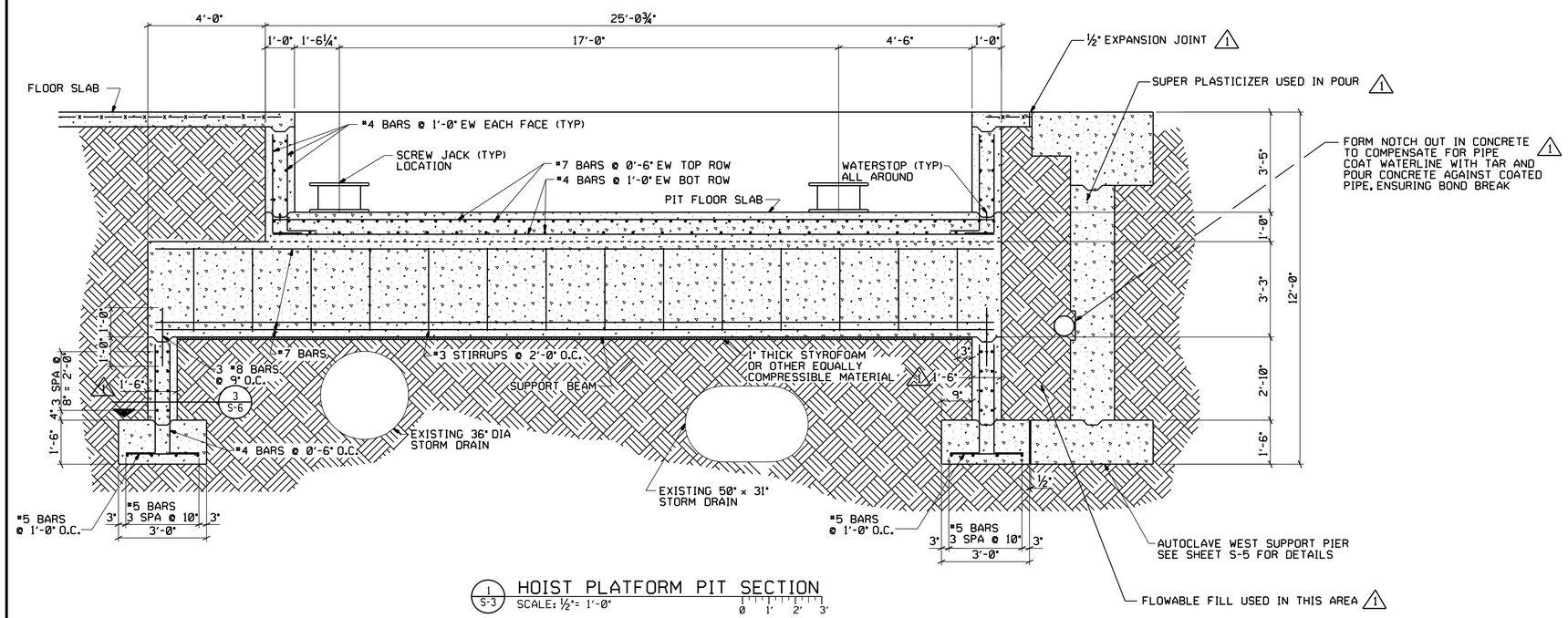
MSFC-FORM 232 REV. 8-21-89-MCL



1 S-3 HOIST PLATFORM PIT PLAN
SCALE: ½"= 1'-0" 0 1' 2' 3'



2 S-3 HOIST PLATFORM PIT SECTION
SCALE: ½"= 1'-0" 0 1' 2' 3'



1 S-3 HOIST PLATFORM PIT SECTION
SCALE: ½"= 1'-0" 0 1' 2' 3'

1 REFERENCE DESIGN CHANGES REVIEWED FOR INCORPORATION
RFI-008, 011, 012, 013, 015, 019, 020

CADD DRAWING
CHANGES TO THIS DRAWING SHALL BE MADE ON CADD ONLY.
12865 / 11-15-96 / JRW
LATEST CADD UPDATE: 04-06-99 07:15 AM
BY: R. WILLIS

REV.	BY	DATE	REVISION	C.I. NO.	APPROVED	
1	CG	4/6/99	AS-BUILT PER REDLINES	98088	RDP	LWG

CONCURRENCE: / / / /
CONCURRENCE: / / / /
CONCURRENCE: / / / /
CONCURRENCE: JOHN R. NEBRIG — MAINTENANCE — 06/23/97
CONCURRENCE: J.H. VICK — USING OFFICE — 06/24/97
CONCURRENCE: M.L. McINTOSH — ENVIRONMENTAL HEALTH — 06/19/97
CONCURRENCE: DENNIS S. DAVIS — SAFETY OFFICE — 04/19/97
CONCURRENCE: M.E. MANN — COMMUNICATIONS OFFICE — 06/18/97

TELECOMMUNICATIONS EQUIPMENT AFFECTED BY THIS CONTRACT WORK IS NOT TO BE ALTERED OR REMOVED BY THE CONTRACTOR; CONTACT THE COTR IN THE EVENT OF A CONFLICT.

REF. NO.

S-3 OF 6

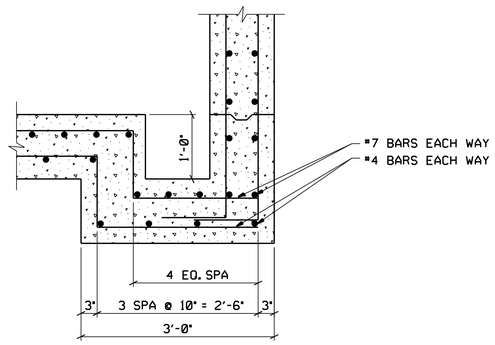
NASA Marshall Space Flight Center
Huntsville, Alabama 35812

WORK REQUEST NO. 1286-0000-288-5.R

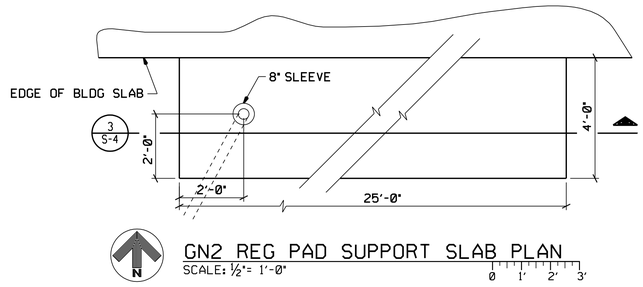
BUILDING 4707
INSTALL AUTOCLAVE
SECTIONS AND DETAILS

AE FIRM: AJT & ASSOCIATES, INC. HUNTSVILLE - ALABAMA		NASA AE CONTRACT NO. NASA 8-40083
SUBMITTED: HOWARD C. BOZEMAN	APPROVAL RECOMMENDED: R.B. FELDER	ACCEPTED FOR CONSTRUCTION: J. CLARK BOAZ
AE: DATE: 01-17-97	AB21 DATE: 06-24-97	AB41 DATE: 06-25-97
DESIGNED D. SELLERS	APPROVAL RECOMMENDED: ARTHUR HARGROVE JR AJT & ASSOCIATES, INC.	DWG NO. FAC-FO-4707-S3
DRAWN R. WILLIS		
CHECKED R. TALIANKO	DESIGN DATE: 06-24-97	
SCALE: AS NOTED	SPEC. NO. BMMS-3	SHEET 12 OF 27

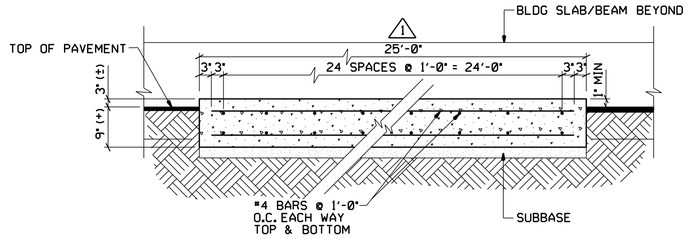
MSFC-FORM 232 REV. 8-21-89-RCL



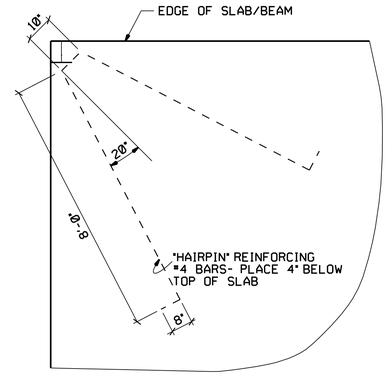
1 S-4 HOIST PIT SUMP REINFORCING
SCALE: 1"= 1'-0"



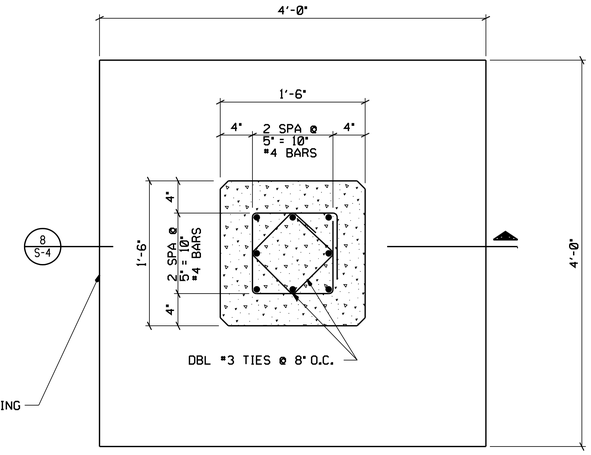
GN2 REG PAD SUPPORT SLAB PLAN
SCALE: ½"= 1'-0"



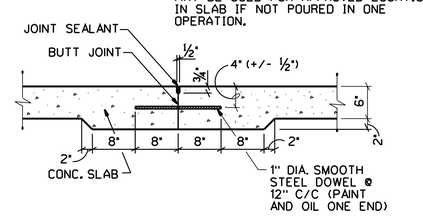
3 S-4 SUPPORT SLAB REINFORCING
SCALE: ½"= 1'-0"



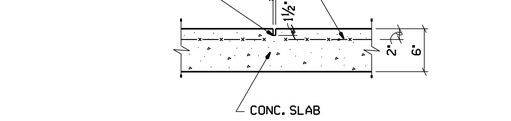
7 S-4 CONCRETE SLAB REINFORCING
SCALE: ½"= 1'-0" -TYPICAL @ EACH FRAME COLUMN



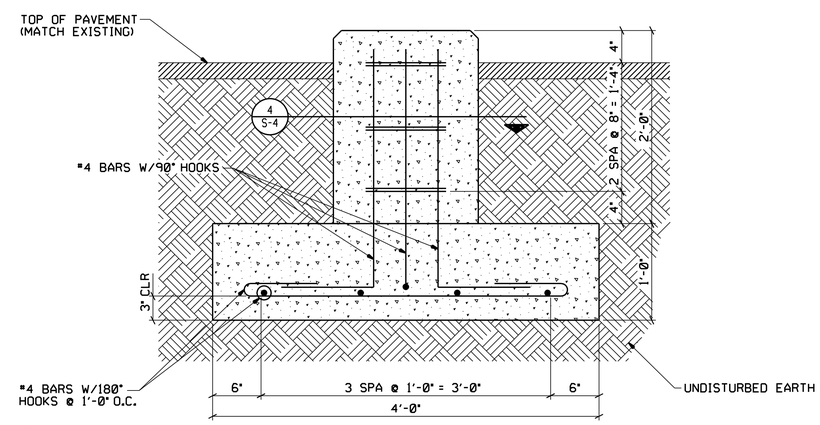
4 S-4 SHED SUPPORT PEDESTAL REINFORCING
SCALE: 1½"= 1'-0"



6 S-4 DETAIL (OPTIONAL SLAB CONSTRUCTION JOINT)
SCALE: 1"= 1'-0"

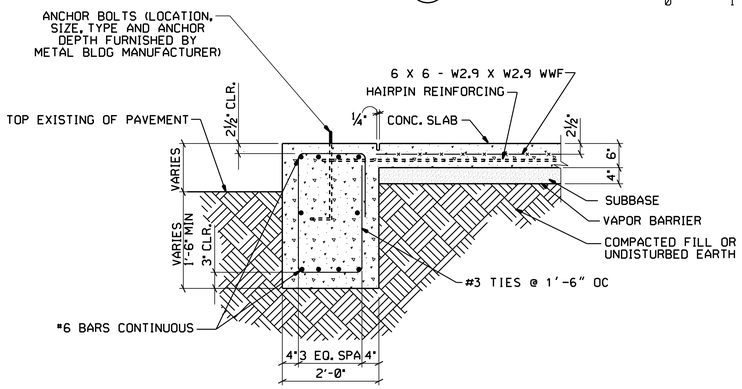


9 S-4 DETAIL @ CONTROL JT.
SCALE: 1"= 1'-0"



NOTE: ANCHOR BOLT SIZE AND LOCATIONS DETERMINED BY METAL BLDG MANUFACTURER

8 S-4 SHED SUPPORT PEDESTAL/FOOTING REINFORCING
SCALE: 1½"= 1'-0"



5 S-4 REINFORCED EDGE BEAM
SCALE: 1"= 1'-0"

REDUCED SIZE DRAWING
DO NOT SCALE

CADD DRAWING
CHANGES TO THIS DRAWING SHALL BE MADE ON CADD ONLY.
12865 11-21-96 JRW
LATEST CADD UPDATE: 04-06-99 07:15 AM
BY: G. GORDON

CONCURRENCE:		
CONCURRENCE:		
CONCURRENCE:		
CONCURRENCE: MAINTENANCE	JOHN R. NEBRIG	06/23/97
CONCURRENCE: USING OFFICE	J.H. VICK	06/24/97
CONCURRENCE: ENVIRONMENTAL HEALTH	M.L. McINTOSH	06/19/97
CONCURRENCE: SAFETY OFFICE	DENNIS S. DAVIS	06/19/97
CONCURRENCE: COMMUNICATIONS OFFICE	M.E. MANN	06/18/97

TELECOMMUNICATIONS EQUIPMENT AFFECTED BY THIS CONTRACT WORK IS NOT TO BE ALTERED OR REMOVED BY THE CONTRACTOR. CONTACT THE COTR IN THE EVENT OF A CONFLICT.

REF. NO. S-4 OF 6

REV.	BY	DATE	REVISION	C.I. NO.	APPROVED	
	SG	4-6-99	AS-BUILT PER REDLINES	98088	RDP	LWG

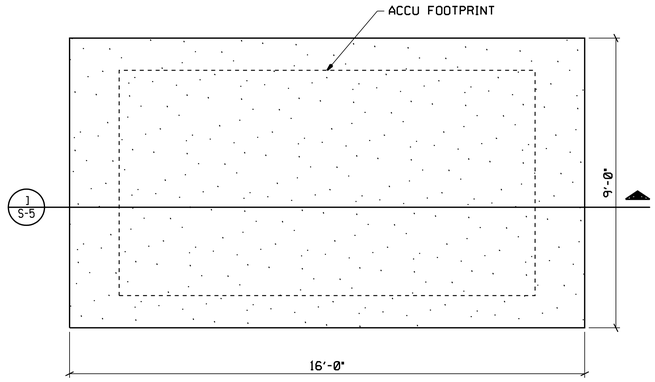
NASA Marshall Space Flight Center Huntsville, Alabama 35812

WORK REQUEST NO. 1286-0000-288-5.R

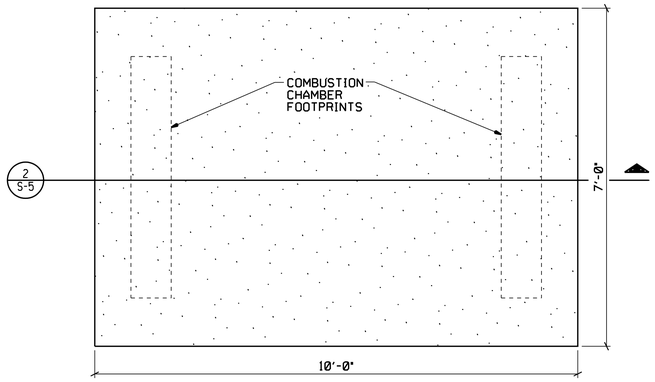
BUILDING 4707
INSTALL AUTOCLAVE
SECTIONS AND DETAILS

AE FIRM: AJT & ASSOCIATES, INC. HUNTSVILLE - ALABAMA		NASA AE CONTRACT NO. NASA 8-40083
SUBMITTED: HOWARD C. BOZEMAN	APPROVAL RECOMMENDED: R.B. FELDER	ACCEPTED FOR CONSTRUCTION: J. CLARK BOAZ
AE: DATE: 01-17-97	AB21 DATE: 06-24-97	AB41 DATE: 06-25-97
DESIGNED D. SELLERS	APPROVAL RECOMMENDED: ARTHUR HARGROVE JR AJT & ASSOCIATES, INC.	DWG NO. FAC-FO-4707-S4
DRAWN R. WILLIS		
CHECKED R. TALIANKO	DESIGN DATE: 06-24-97	
SCALE: AS NOTED	SPEC. NO. BMMS-3	SHEET 13 OF 27

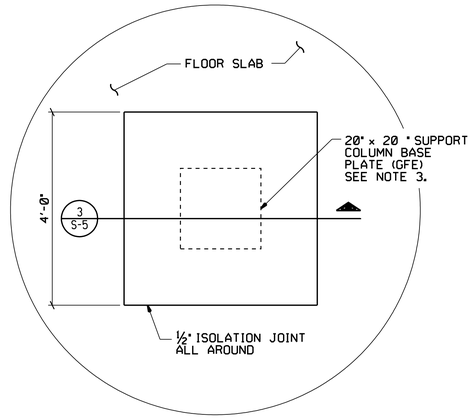
MSFC-FORM 232 REV. 8-21-89-RCL



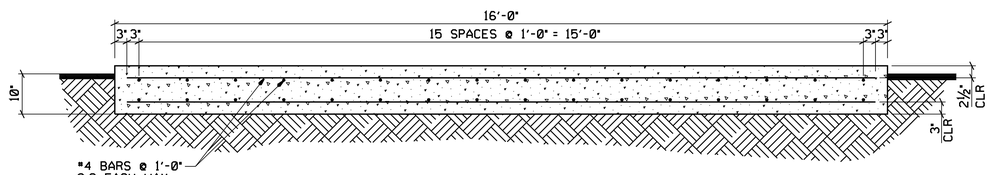
RELOCATED AIR CONDITIONER CONDENSER UNIT SUPPORT SLAB PLAN
SCALE: ½"= 1'-0"



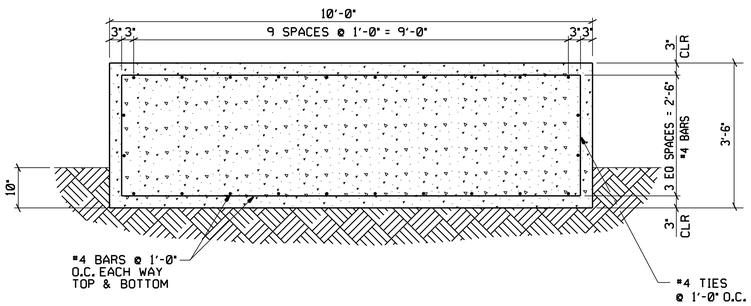
COMBUSTION CHAMBER SUPPORT SLAB PLAN
SCALE: ¾"= 1'-0"



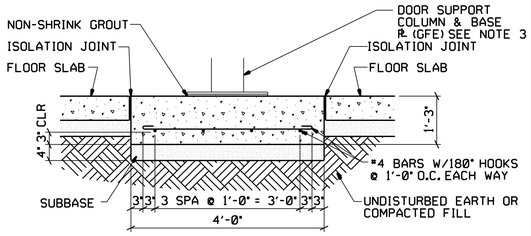
AUTOCLAVE DOOR HINGE SUPPORT SLAB PLAN
SCALE: ¾"= 1'-0"



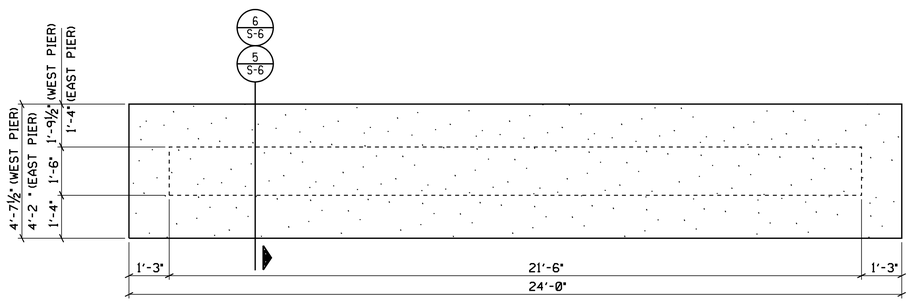
1 S-5 SUPPORT SLAB REINFORCING
SCALE: ¾"= 1'-0"



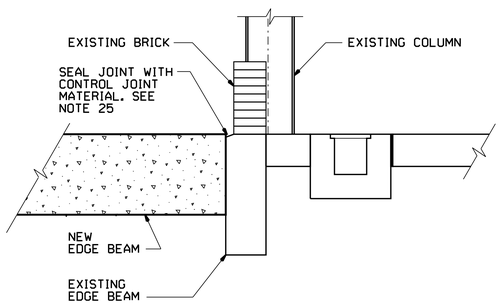
1 2 S-5 SUPPORT SLAB REINFORCING
SCALE: ¾"= 1'-0"



3 S-5 SUPPORT SLAB REINFORCING
SCALE: ¾"= 1'-0"



AUTOCLAVE SUPPORT PIER PLAN
SCALE: ½"= 1'-0"



4 S-5 NEW/EXISTING EDGE BEAM INTERFACE
SCALE: ¾"= 1'-0"
0 1' 2'

1 REFERENCE DESIGN CHANGES REVIEWED FOR INCORPORATION
DCR-003, 035, 037

REDUCED SIZE DRAWING
DO NOT SCALE

CADD DRAWING
CHANGES TO THIS DRAWING SHALL BE MADE ON CADD ONLY.
12865 11-21-96 JRW
LATEST CADD UPDATE: 09-23-99 07:15 AM
BY: G. GORDON

CONCURRENCE: / / / /
CONCURRENCE: / / / /
CONCURRENCE: / / / /
CONCURRENCE: JOHN R. NEBRIG MAINTENANCE /06/23/97/
CONCURRENCE: J.H. VICK USING OFFICE /06/24/97/
CONCURRENCE: M.L. McINTOSH ENVIRONMENTAL HEALTH /06/19/97/
CONCURRENCE: DENNIS S. DAVIS SAFETY OFFICE /06/19/97/
CONCURRENCE: M.E. MANN COMMUNICATIONS OFFICE /06/18/97/

TELECOMMUNICATIONS EQUIPMENT AFFECTED BY THIS CONTRACT WORK IS NOT TO BE ALTERED OR REMOVED BY THE CONTRACTOR. CONTACT THE COTR IN THE EVENT OF A CONFLICT.

REF. NO.

S-5 OF 6

REV.	BY	DATE	REVISION	C.I. NO.	APPROVED
1	GG	9/23/99	AS-BUILT PER REDLINES	98088	RDP LWG

NASA Marshall Space Flight Center Huntsville, Alabama 35812

WORK REQUEST NO. 1286-0000-288-5,R

BUILDING 4707
INSTALL AUTOCLAVE
SECTIONS AND DETAILS

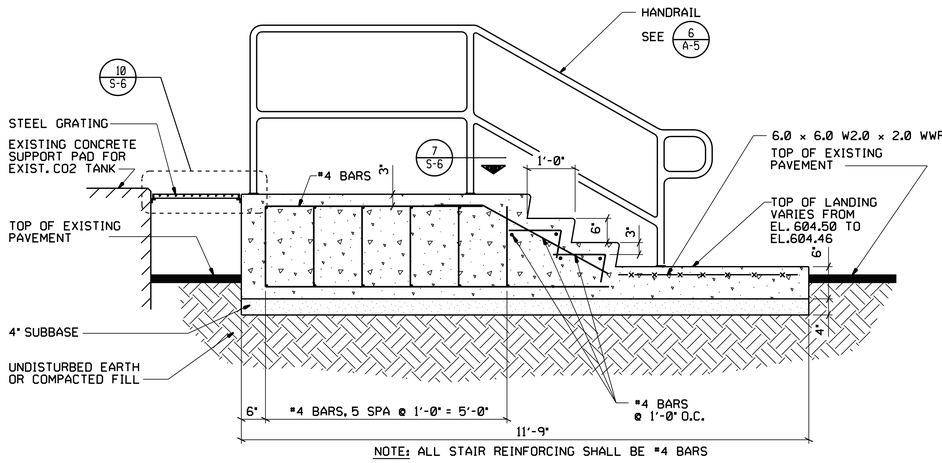
AE FIRM: AJT & ASSOCIATES, INC. HUNTSVILLE - ALABAMA
NASA AE CONTRACT NO. NASA 8-40083

SUBMITTED:	APPROVAL RECOMMENDED:	ACCEPTED FOR CONSTRUCTION:
HOWARD C. BOZEMAN	R.B. FELDER	J. CLARK BOAZ
AE: DATE: 01-17-97	AB2I DATE: 06-24-97	AB4I DATE: 06-25-97

DESIGNED D. SELLERS
DRAWN R. WILLIS
CHECKED R. TALIANKO
SCALE: AS NOTED
APPROVAL RECOMMENDED: ARTHUR HARGROVE JR AJT & ASSOCIATES, INC.
DESIGN DATE: 06-24-97
SPEC. NO. BMMS-3

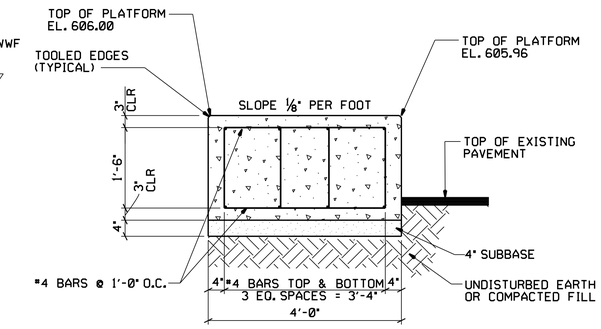
DWG NO. FAC-FO-4707-S5
SHEET 14 OF 27

MSFC-FORM 232 REV. 8-21-89-MCL

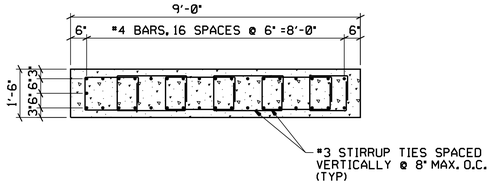


NOTE: ALL STAIR REINFORCING SHALL BE #4 BARS

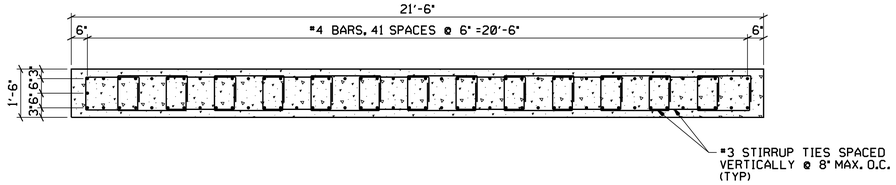
1 S-6 STAIR/LANDING SECTION
SCALE: ¾" = 1'-0"



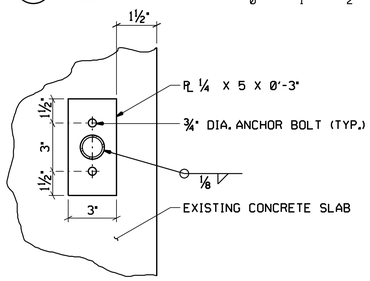
2 S-6 STAIR PLATFORM SECTION
SCALE: ¾" = 1'-0"



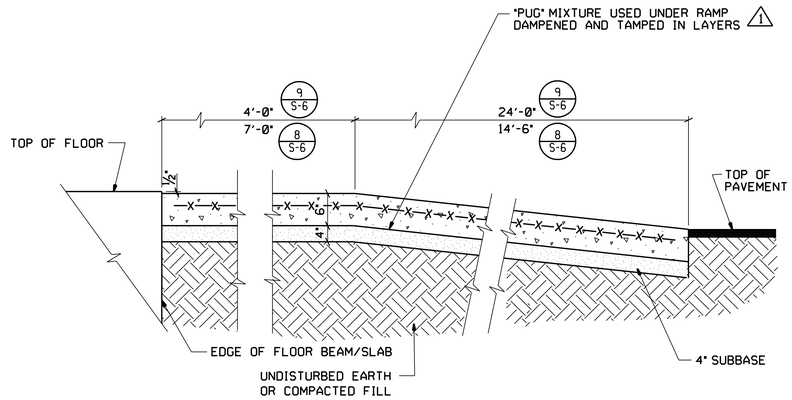
3 S-6 HOIST SUPPORT COLUMN REINFORCING
SCALE: ½"= 1'-0"



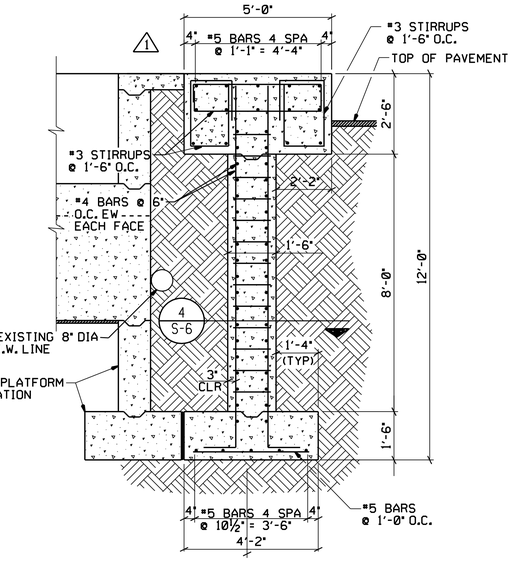
4 S-6 AUTOCLAVE SUPPORT COLUMN REINFORCING
SCALE: ½"= 1'-0"



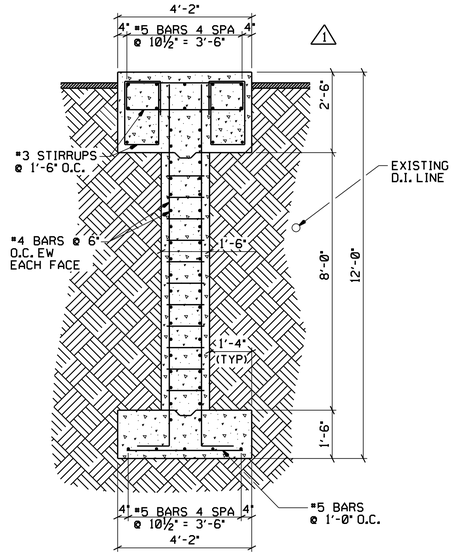
7 S-6 HANDRAIL ANCHOR DETAIL (ROTATED 90°)
SCALE: 3"= 1'-0"



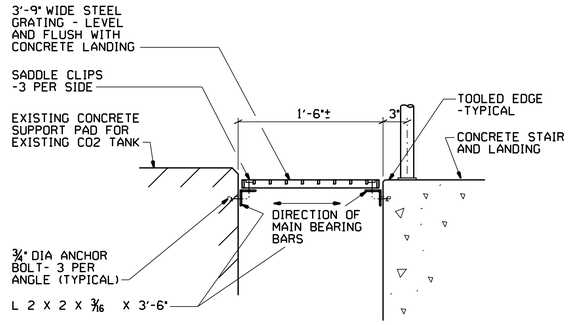
8 S-6 9 S-6 APPROACH RAMP/SLAB
SCALE: ¾"= 1'-0"



5 S-6 AUTOCLAVE WEST SUPPORT PIER SECTION
SCALE: ½"= 1'-0"



6 S-6 AUTOCLAVE EAST SUPPORT PIER SECTION
SCALE: ½"= 1'-0"



STEEL GRATING: EQUAL TO "McNICHOLS" GW SERIES WITH 1" X ⅛" BEARING BARS. FURNISH "McNICHOLS" TYPE C GALV. STEEL SADDLE CLIPS WITH APPROPRIATE SIZE SELF-DRILLING SELF-TAPPING FASTENERS

10 S-6 GRATING DETAIL
SCALE: 1½"= 1'-0"

1 REFERENCE DESIGN CHANGES REVIEWED FOR INCORPORATION

DCR-004
RF1-021, 022, 053

CADD DRAWING

CHANGES TO THIS DRAWING SHALL BE MADE ON CADD ONLY.

12865 / 11-21-96 / JRW — LATEST CADD UPDATE: 06-27-97 07:30 AM — BY: R. WILLIS

CONCURRENCE: / / / /
CONCURRENCE: / / / /
CONCURRENCE: / / / /
CONCURRENCE: JOHN R. NEBRIG / 06 / 23 / 97 / MAINTENANCE
CONCURRENCE: J.H. VICK / 06 / 24 / 97 / USING OFFICE
CONCURRENCE: M.L. McINTOSH / 06 / 19 / 97 / ENVIRONMENTAL HEALTH
CONCURRENCE: DENNIS S. DAVIS / 06 / 19 / 97 / SAFETY OFFICE
CONCURRENCE: M.E. MANN / COMMUNICATIONS OFFICE / 06 / 18 / 97 /

TELECOMMUNICATIONS EQUIPMENT AFFECTED BY THIS CONTRACT WORK IS NOT TO BE ALTERED OR REMOVED BY THE CONTRACTOR. CONTACT THE COTR IN THE EVENT OF A CONFLICT.

REF. NO. S-6 OF 6

REV.	BY	DATE	REVISION	C.I. NO.	APPROVED
1	CG	8/5/99	AS-BUILT PER REDLINES	98088	RDP LWG

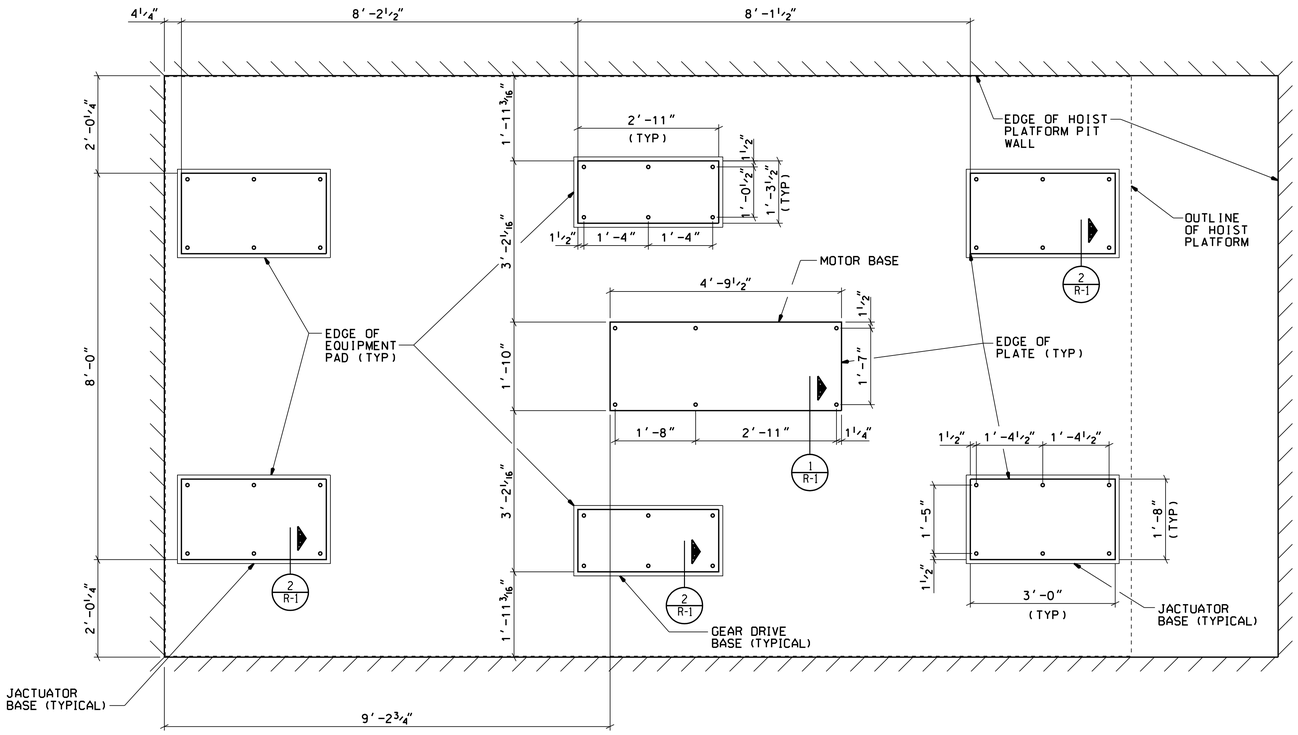
NASA Marshall Space Flight Center
Huntsville, Alabama 35812

WORK REQUEST NO. 1286-0000-288-5.R

BUILDING 4707
INSTALL AUTOCLAVE
SECTIONS AND DETAILS

AE FIRM: AJT & ASSOCIATES, INC. HUNTSVILLE - ALABAMA
NASA AE CONTRACT NO. NASA 8-40083
SUBMITTED: HOWARD C. BOZEMAN
APPROVAL RECOMMENDED: R.B. FELDER
ACCEPTED FOR CONSTRUCTION: J. CLARK BOAZ
AE: DATE: 01-17-97
ARCH: DATE: 06-24-97
ABE: DATE: 06-25-97
DESIGNED D. SELLERS
DRAWN R. WILLIS
CHECKED R. TALIANKO
APPROVAL RECOMMENDED: ARTHUR HARGROVE JR, AJT & ASSOCIATES, INC.
DESIGN DATE: 06-24-97
SCALE: AS NOTED
SPEC. NO. BMMS-3
DWG NO. FAC-FO-4707-S6
SHEET 15 OF 29

MSFC-FORM 232 REV. 8-21-89-RCL



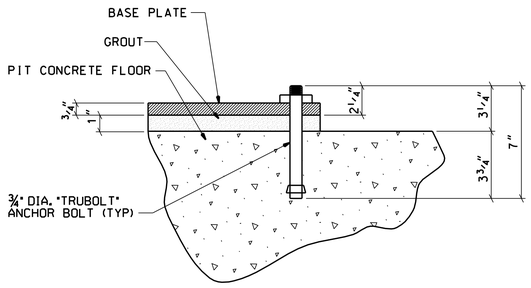
N

SCREW JACK ANCHOR PLAN
SCALE: 3/4" = 1'-0"

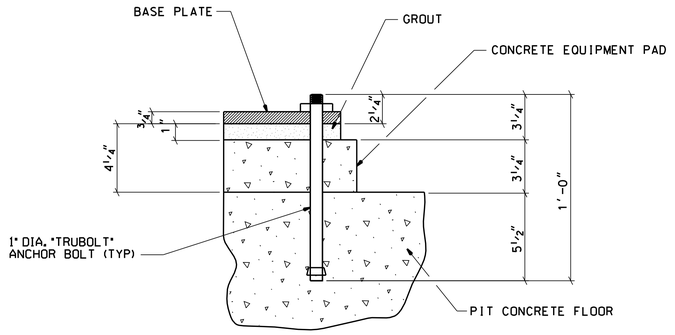
NOTES

1. ANCHOR BOLT INSTALLATION AND/OR GROUTING OPERATIONS ARE REQUIRED FOR THE FOLLOWING GFE AUTOCLAVE EQUIPMENT:
   AUTOCLAVE SUPPORT SADDLE BASE PLATES
   COMBUSTION CHAMBER SUPPORT SADDLE BASE PLATES
   AUTOCLAVE DOOR HINGE SUPPORT BASE PLATE
   HOIST PLATFORM SCREW JACK SYSTEM BASE PLATES
2. GROUT THICKNESSES AND ANCHOR BOLT SIZES AND LOCATIONS ARE PER AUTOCLAVE MANUFACTURER DRAWINGS OR PRELIMINARY FIELD MEASUREMENTS. VERIFY DIMENSIONS AND RELATIVE LOCATIONS AT THE SITE PRIOR TO GROUTING OPERATIONS AND ANCHOR BOLT PLACEMENT. IF DISCREPANCIES ARE NOTED, CONFIRM COURSE OF ACTION WITH THE CONTRACTING OFFICER BEFORE PROCEEDING.
3. WHEN POSITIONING AUTOCLAVE FOR GROUTING OPERATIONS, SHIM PLATES MAY BE UTILIZED FOR LEVELING AND STABILIZING SUPPORT SADDLE BASE PLATES. MINIMUM BEARING AREA FOR EACH SHIM PLATE IS 200 SQUARE INCHES (SUGGESTED PLAN DIMENSIONS: 1'-3" X 1'-3"). SHIM PLATES WHICH CONTACT SUPPORTING CONCRETE SURFACE MUST BE A MINIMUM OF 1 INCH THICK, AND MUST BEAR COMPLETELY ON THE CONCRETE.
4. WHEN POSITIONING EQUIPMENT OTHER THAN AUTOCLAVE FOR GROUTING, SHIM PLATES MAY BE UTILIZED FOR LEVELING AND STABILIZING. MINIMUM BEARING AREA FOR EACH SHIM PLATE IS 25 SQUARE INCHES.
5. ALLOW A MINIMUM OF 28 DAYS FOR CONCRETE EQUIPMENT PADS TO CURE PRIOR TO BASE PLATE INSTALLATION AND GROUTING, UNLESS OTHERWISE DIRECTED BY COTR.

N.I.C. ⚠1



1 R-1 MOTOR BASE ANCHORAGE
NOT TO SCALE



2 R-1 GEAR DRIVE/JACTUATOR BASE ANCHORAGE
NOT TO SCALE

NOTE: SEE DRAWING FAC-FQ-4707-S1 FOR HOIST PLATFORM PIT LOCATION AND DRAWING FAC-FQ-4707-S2 FOR CONCRETE, GROUT AND ANCHOR BOLT SPECIFICATIONS.

CADD DRAWING
CHANGES TO THIS DRAWING SHALL BE MADE ON CADD ONLY.
12865 — 07-10-97 — JRW
LATEST CADD UPDATE: 11-02-99 10:00 AM
BY: G.GORDON

REV.	BY	DATE	REVISION	C.I. NO.	APPROVED	
⚠1	GG	11/2/99	AS-BUILT PER REDLINES	98088	RDP	LWG

CONCURRENCE:
BOGIE GREGSON /07/21/97/
CONCURRENCE: / / /
CONCURRENCE: / / /
CONCURRENCE: / / /
MAINTENANCE
CONCURRENCE: / / /
USING OFFICE
CONCURRENCE: / / /
ENVIRONMENTAL HEALTH
CONCURRENCE: / / /
SAFETY OFFICE
CONCURRENCE: / / /
COMMUNICATIONS OFFICE

TELECOMMUNICATIONS EQUIPMENT AFFECTED BY THIS CONTRACT WORK IS NOT TO BE ALTERED OR REMOVED BY THE CONTRACTOR. CONTACT THE COTR IN THE EVENT OF A CONFLICT.

REF. NO. R-1 OF 2

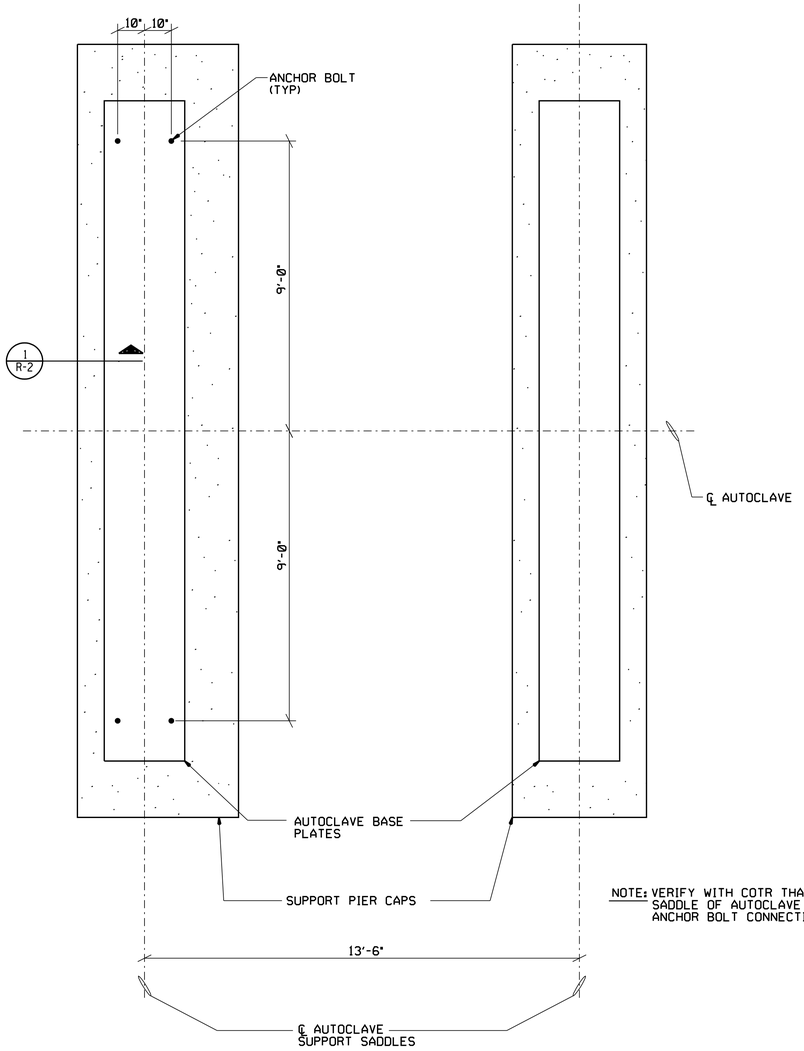
NASA Marshall Space Flight Center
Huntsville, Alabama 35812

WORK REQUEST NO. 1286-0000-288-5.R

BUILDING 4707
INSTALL AUTOCLAVE
EQUIPMENT BASE SUPPORT DETAILS

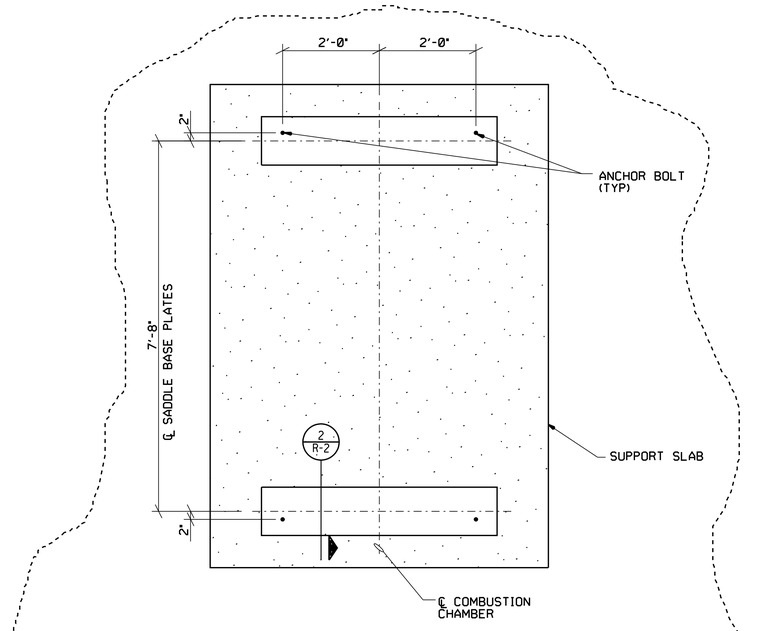
AE FIRM: AJT & ASSOCIATES, INC. HUNTSVILLE - ALABAMA		NASA AE CONTRACT NO. NASA 8-40083
SUBMITTED: HOWARD C. BOZEMAN	APPROVAL RECOMMENDED: RANDY FELDER	ACCEPTED FOR CONSTRUCTION: CLARK BOAZ
AE: DATE: 07/21/97	AB21 DATE: 07/21/97	AB41 DATE: 07/21/97
DESIGNED D. SELLERS	APPROVAL RECOMMENDED: ARTHUR HARGROVE, AJT & ASSOCIATES, INC.	DWG NO. SK-12865R-R1
DRAWN R. WILLIS		
CHECKED R. TALIANKO	DESIGN DATE: 07/21/97	
SCALE: AS NOTED	SPEC. NO. BMMS-3	SHEET 1 OF 2

MSFC-FORM 232 REV. 8-21-89-RCL



NOTE: VERIFY WITH COTR THAT EAST SUPPORT SADDLE OF AUTOCLAVE REQUIRES NO ANCHOR BOLT CONNECTIONS.

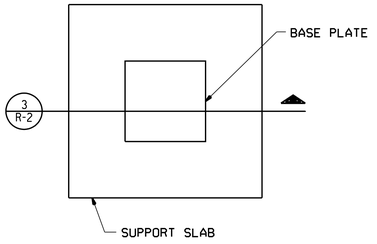
AUTOCLAVE BASE PLATE/ANCHOR BOLT PLAN
SCALE: ½"= 1'-0"



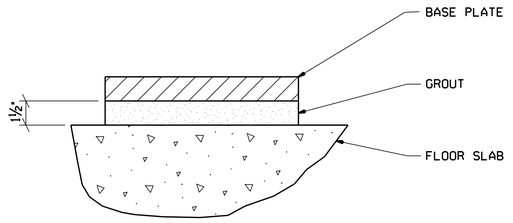
COMBUSTION CHAMBER BASE PLATE/ANCHOR BOLT PLAN
SCALE: ¾"= 1'-0"

NOTE: SEE DRAWING FAC-FQ-4707-S1 FOR LOCATIONS OF BASE MEMBERS SHOWN ON THIS SHEET. SEE DRAWING FAC-FQ-4707-S2 FOR GROUT AND ANCHOR BOLT SPECIFICATIONS.

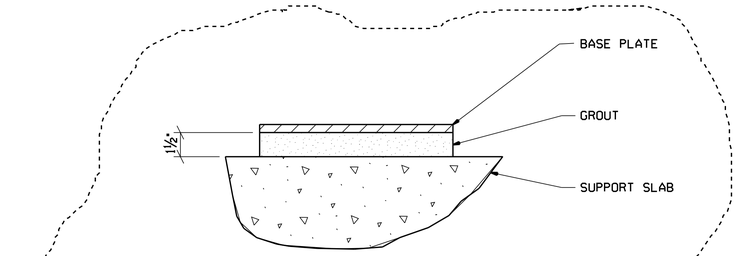
NOT ANCHORED 1



AUTOCLAVE DOOR HINGE BASE PLATE PLAN
SCALE: ¾"= 1'-0"

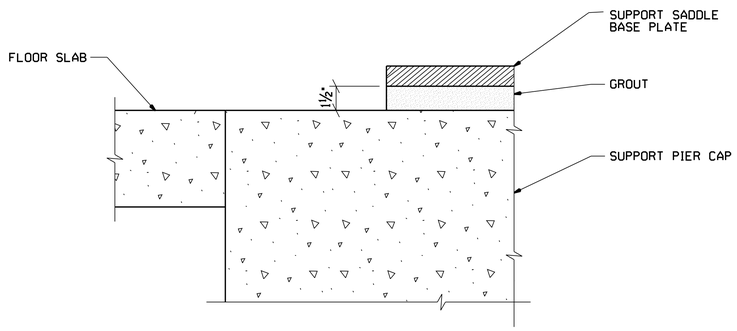


3 R-2 GROUT AT DOOR HINGE SUPPORT BASE
SCALE: 3"= 1'-0"



2 R-2 GROUT AT COMBUSTION CHAMBER SUPPORT BASE
SCALE: 3"= 1'-0"

N.I.C. 1



1 R-2 GROUT AT AUTOCLAVE SUPPORT BASE
SCALE: 3"= 1'-0"

CADD DRAWING
CHANGES TO THIS DRAWING SHALL BE MADE ON CADD ONLY.
12865 07-10-97 JRW
LATEST CADD UPDATE: 11-02-99 10:30 AM
BY: G.GORDON

CONCURRENCE:						
BOGIE GREGSON	/07/21/97/					
CONCURRENCE:	/ / / /					
CONCURRENCE:	/ / / /					
CONCURRENCE: MAINTENANCE	/ / / /					
CONCURRENCE: USING OFFICE	/ / / /					
CONCURRENCE: ENVIRONMENTAL HEALTH	/ / / /					
CONCURRENCE: SAFETY OFFICE	/ / / /					
CONCURRENCE: COMMUNICATIONS OFFICE	/ / / /					

REV.	BY	DATE	REVISION	C.I. NO.	APPROVED	
1	CG	11/2/99	AS-BUILT PER REDLINES	98088	RDP	LWG

TELECOMMUNICATIONS EQUIPMENT AFFECTED BY THIS CONTRACT WORK IS NOT TO BE ALTERED OR REMOVED BY THE CONTRACTOR. CONTACT THE COTR IN THE EVENT OF A CONFLICT.

REF. NO. R-2 OF 2

NASA Marshall Space Flight Center Huntsville, Alabama 35812

WORK REQUEST NO. 1286-0000-288-5.R

BUILDING 4707
INSTALL AUTOCLAVE
EQUIPMENT BASE SUPPORT DETAILS

AE FIRM: AJT & ASSOCIATES, INC. HUNTSVILLE - ALABAMA		NASA AE CONTRACT NO. NASA 8-40083
SUBMITTED: HOWARD C. BOZEMAN	APPROVAL RECOMMENDED: RANDY FELDER	ACCEPTED FOR CONSTRUCTION: CLARK BOAZ
AE: DATE: 07/21/97	AB21 DATE: 07/21/97	AB41 DATE: 07/21/97
DESIGNED D. SELLERS	APPROVAL RECOMMENDED: ARTHUR HARGROVE AJT & ASSOCIATES, INC.	DWG NO. SK-12865R-R2
DRAWN R. WILLIS		
CHECKED R. TALIANKO	DESIGN DATE: 07/21/97	
SCALE: AS NOTED	SPEC. NO. BMMS-3	SHEET 2 OF 2

MSFC-FORM 232 REV. 8-21-89-MCL